

SOME ARMS MUSEUMS OF GREAT BRITAIN

by Thomas T. Hoopes



In April of 1963 I was permitted to represent the City Art Museum of St. Louis, Missouri at the Third International Congress of the Association of Museums Arms and Military History. That Association is an organization of directors, curators and other professional museum personnel. No amateurs may belong, nor may the owners of private collections unless these are open to the public. The members meet in Congress every three years; the first, organizing congress was held at Copenhagen in 1957; the second in 1960 in Vienna, the third, about which I shall tell you today, at London in 1963; the fourth, in 1966, will convene in Moscow if that city is then still in existence.

The object of these meetings is to learn of recent discoveries and advances in the history of Arms and Armor, to meet fellow specialists and compare notes, and to inspect the museums of arms and military history of the host nation. Naturally each such museum tries to appear at its best before such a group of specialists, so we had an opportunity of seeing these institutions under the most favorable conditions — except for a shortage of time.

I do have some slides to show you, but I must apologize for the rather spotty coverage. We visited several institutions each day. In some no photographing was permitted at all, and in most of them time did not allow making pictures of individual speci-

mens. From some I was able to purchase slides or photographs; from others I could not. For these latter I can give you only oral descriptions of the most interesting exhibits to look for when you go there.

The Congress with 124 representatives of 21 nations convened on April 21st at the Tower of London one of the most impressive institutions in the world, and probably the oldest continuously garrisoned fortress. As you see, it is not a single tower but something like a small walled city with many towers along the concentric walls and with a large square building having towers at its corners, and known as the "White Tower" in the middle. It covers 18 acres. (2) (Pictures are at end of this article)

Originally constructed by William The Conqueror in the eleventh century, it has been a palace, a prison, an armory, a mint, a record office, an mananagerie and an observatory.

We must hasten to the armories, in the white Tower, the large central building, where one of the world's greatest collections of arms and armor is to be found. Years ago the suits of armor were neatly arranged in a row, one or more assigned with more imagination than accuracy to each of the Kings of England, beginning with William the Conqueror, but now they are assigned to their proper chronological positions, are well displayed and accurately labelled.

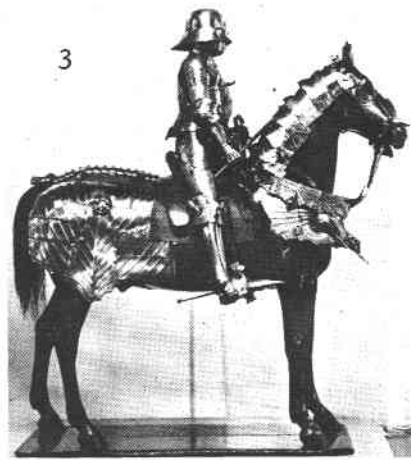
English historical armor is displayed on the top floor, together with European armor in general. On the second floor are weapons other than projectile, while the projectile weapons are shown on the ground floor, with cannon in the basement. Also on the ground floor are such interesting relics as the cloak in which Gen. Wolfe died at Quebec in 1759, and the daggers which Col. Blood carried when he tried to steal the crown jewels in 1671. There is a good developmental series of firearms and another of swords, including personal swords of the eighteenth and nineteenth century kings of England. There are also a group of English bow staves—unfinished long bows—recovered from the wreck of the warship Mary Rose, sunk in 1545, the only English long bows known to have survived from before the seventeenth century.

But the cream of the collection quite properly is at the top: the fine armor on the third floor. Here is covered the whole development of the art of armorer. (3) We start with a complete suit of Gothic armor from the end of the 15th century for man and horse, a comparatively recent addition to the Tower collection. Although I believe that there are associations and resotations, such complete outfits are of the utmost rarity. Notice the elegant simplicity of the armor.

Next (4) is what has been called "the grandest jousting helm in existence," the great Brocas heaume, formerly in the Rotunda Museum at Woolwich. It is a magnificent forging, with the upper edge out-rolled and thickened to give extra strength to the ocularium or eye slit. Incidentally, you wouldn't think it possible to see out of such a narrow slit, but I've tried it on a similar helmet, and you really have excellent visibility -



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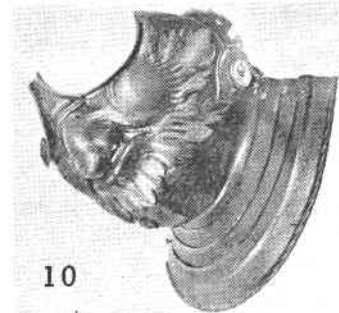
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as long as you don't try to look up or down. The large rivets are covered with brass caps, soldered on. Notice the adjustable hinge at the front, by which the heaume was attached to a pair of staples on the breastplate. It dates from close to 1500.

The glory of the collection is the magnificent armor of Henry the eighth, and his court of which there are many examples in the Tower. This (5) is a beautiful outfit for horse and man, from the first quarter of the XVI century. Notice the skirt-like thigh defence or "tonnelet," the bottom edge of which has applied gilt brass monograms of Henry and his wife Catherine of Aragon. It was made between 1511 and 1514.

Henry's friend and rival the Emperor Maximilian I of Austria presented him with this (6) grotesque helmet. I doubt that he meant to reflect on Catherine's virtue, for Henry was a sensitive soul, and they were on excellent terms when they met in 1520 on the field of the cloth of gold. Jousts, tourneys, and other military exercises were part of the festivities at that meeting, and there are in the Tower many examples of specialized armor for such highly specialized contests. Here (7) is a huge tilting vamplate for a lance, far larger than the ordinary conical vamplate used on war lances.

It is interesting to compare the early armor of Henry the eighth which we have just seen, made while he was young and slender with the armor he wore later, as he increased in girth. This suit (8) was made for him about 1535, at the armory workshop which Henry established for his own use and that of his court at Greenwich, England. Now he was much more bulky as you can readily see, but he was still an active man and the armor was thoroughly functional.

Here is another (9) fine suit of armor, susedded, engraved and partly gilt, from the first half of the XVI century. It is believed to have belonged to a Du d'Uzes in France, but was formerly called the armor of the Chevalier Bayard, famous as being "without fear and without reproach."

About the middle of the sixteenth century it became customary for great princes to have specially made parade armor in which they could appear before their populace. Such armor was highly decorated and, though very ornamental, quite unsuitable for actual use in the field. It was very expensive and required the greatest skill to make it. It is far harder to beat steel into an elaborately repoussé design than it is to do the same thing with silver, and that is hard enough, Heaven knows!

The Tower has a number of pieces of such highly decorated armor as well as many fine arms of all kinds. This (10) is a so-called "falling buffe" or face defence by the famed Negroli brothers of Milan, dated 1538. Then somewhat later in the century we have this (11) complete suit of embossed armor. Note the lion head motives in the decoration.

Turning from such essentially parade armor to that suitable for actual use on the battlefield, we find that the Greenwich workshop founded by Henry VIII continued to operate under his successors. This (12) is a fine Greenwich suit made about 1585 for queen Elizabeth's favorite Robert Dudley, Earl of Leicester. The decoration of etched and gilded bands is characteristic of Greenwich work. There are several other suits of this type in the Tower. Such armor was strongly influenced by the civilian costume of the period: note the ridged breastplate and the wide thigh guards, made to fit over bulky trunk hosen.

Later still we have a magnificently etched and completely gilt suit (13) made about 1625 for King Charles I, though apparently never worn. It is of French manufacture, and has its original lining. But the day of armor was about over, and by the middle of the century we find (14) a Cromwellian pikeman who has shed arm and leg armor, and wears only a hat-like helmet, breast and backplates and thigh guards.

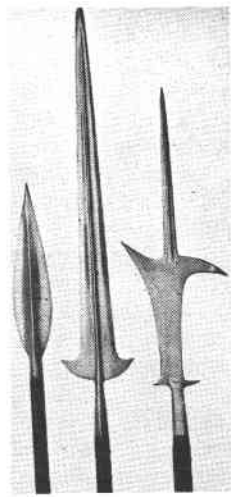
The collection of arms in the Tower is very important too, but I can show only a few items. Here (15) are a boar spear, a long partizan and a primitive halberd. Here (16) is a wheellock pistol of about 1520, a very early example of that type of discharge mechanism. This also has the mechanism largely external, a very primitive form. The pan cover opening mechanism is unusually simple; instead of having a sliding pan cover pivoted to an arm which is activated by a cam on the wheel arbor, this pistol has a pan cover which swivels sideways. The pivot of the pan cover extends through the pan, and terminates in a horizontal hook, which engages with a deep notch or hole in the side of the wheel. When the wheel starts to revolve, it pushes this hook sideways out of engagement, and thus swings open the pan cover. In 1935 I found a number of these prehistoric wheellocks in a pile of discarded iron rubbish in the basement of the National Museum at Budapest. I called them to the attention of the museum authorities; they are now on exhibition as examples of the earliest known wheellocks, except for one, which was traded to the National Arms Collection of Vienna, and is on exhibition there today.

Here (17) is another primitive, a snaphaunce pistol of about 1580, with the mechanism largely on the outside of the lockplate. This is probably the earliest form of snaphaunce. Then a century later here is (18) a Scottish snaphaunce pistol with a left-handed lock dated 1619, together with a typical Scottish snaphaunce bun. (They are rare).

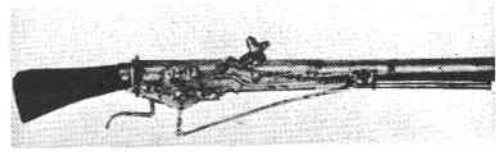
Down in the basement of the white Tower there is a fine collection of bronze mortars and other pieces of ordnance. Some of these were considerably injured in a great fire which took place in the Tower in 1841; the barrels have drooped like overheated wax candles.



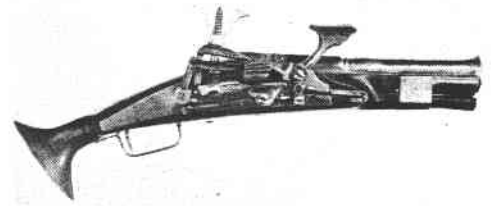
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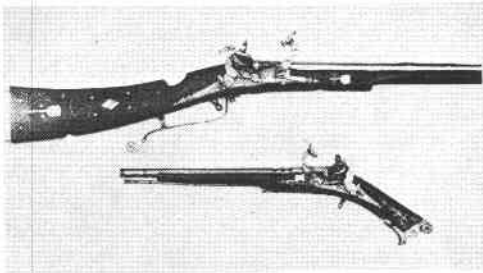
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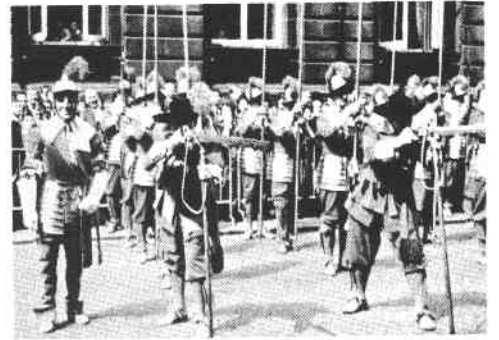
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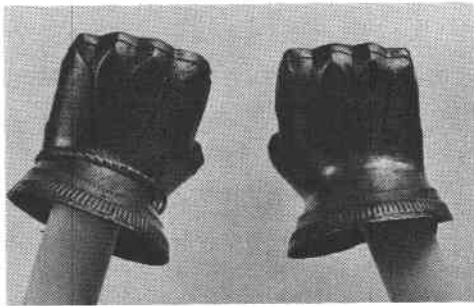
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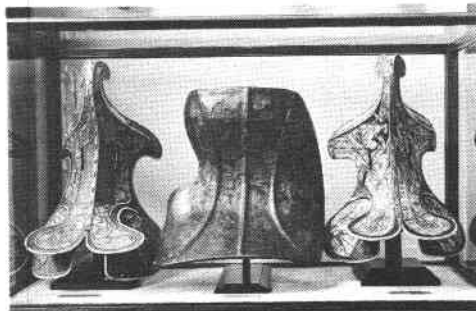


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Do not neglect to visit also what are called the "new armouries," the 17th century building over against the inner wall of the Tower enclave. Here you will see some of the finest arms of the 18th century including some remarkable Oriental pieces and among them a complete suit of armor for an elephant. (19) In this building there is also some excellent East Indian armor of the "Chat aina" or "four mirrors" type and the largest variety of Chinese polearms that I have ever seen. Apparently the Chinese loved the most extravagant and fanciful shapes, which could even outdo some of the apparently quite impractical European forms. In this Patented by James Puckle in 1718; he claimed the unique advantage that it could be equipped with one barrel to shoot round bullets against Christian adversaries or another to use square projectiles in dealing with infidels. There are a number of other interesting machine guns, too. There is a whole case of self-loading repeating flintlock pistols of the Lorenzoni type, including one signed by A. Nuterisch and another by Bartolomeo Catal. We are more familiar with this sort of pistol made by Wetschgi of Augsburg and Cookson of Boston and London. There is a magnificent gold-mounted pair of Boutet pistols in a case, and some excellent Japanese sword blades including a fine one by Sadamune of Sagami, with a horimeno carving of a dragon.

In the evening we attended a reception at the Hall of the Worshipful Company of Armourers and Braziers. Armourers' Hall contains a number of good pieces of armor, as well as some not so good; probably the most important item is the Greenwich armor of Sir Henry Lee, complete with bevor and locking gauntlet, just as it is shown in the drawing in Viscount Dillon's "Almain Armourer's Album." There is also a good armet or English burganet and a tilting heaume with a swan crest which is however, not of universally unquestioned authenticity.

On the following day we visited the Imperial War Museum on Lambeth Road. This Museum contains exclusively material related to the military history of Great Britain from 1914 on. It is an enormous institution, and anyone planning to examine its exhibits should allow ample time. "In the exhibition galleries are to be seen the means by which the wars were fought on land, at sea, and in the air, the ways and conditions in which they were used, relics of historic events and of gallant men and women, reminders of what the war meant in suffering and loss of life, and a record of what was endured by the men, women, and children who lived through the war years." Even to one not particularly concentrated on modern armament there is something fascinating in being within arms length of one of the "buzz bombs" or one of the V-2 rockets which for a time made life in England such a nightmare. It was interesting to learn that in the early days of World War I, before the invention of the trench mortar, the ancient crossbow was revived to throw hand grenades from the front line trenches across no-man's land.

Leaving the Imperial War Museum we went to the Mansion House, the official residence of the Lord Mayor of London, where, we had a most unusual and interesting experience watching a review of the Company of Pikeman and Musketeers of the Honorable Artillery Company.

Here the musketeers (20) have placed the supporting forks under the barrels of their muskets and are about to fire them, fortunately for the honored visitors of the Congress, with blank charges.

From the Mansion House we moved to the Wallace Collection at Hartford House in Manchester Square. This handsome building houses the private collection of Sir Richard Wallace (1818-90), He and his ancestors for several generations were avid collectors and as they were immensely wealthy they were able to acquire a collection of paintings, porcelains, furniture, arms and armor comparable to those of the best European Museums. In fact the two great British arms and armor collections, the Tower and the Wallace Collection, are considered together to rank, with Paris and Madrid, as second only to the Imperial collection at Vienna.

The Wallace Collection, has a number of important early pieces. There is an extremely beautiful pair of Gothic gauntlets (21) with brass edging, reminiscent of the great Gothic armor of Archduke Sigmund of Tyrel in the Vienna Collection. They are north Italian and date between 1360 and 1390 A.D. Only slightly later, from about 1390 to 1400, in a fine north Italian basinet (22) with a modern camail of chain mail. Then there is an early English jousting helmet or heaums (23) from about 1515 and, slightly earlier from about 1500 (24) a fine German jousting shield of wood and leather with painted decoration. It is shown in this picture between two saddles of 1440 to 1480, both of them completely overlaid with plates of bone or engraved staghorn.

The gem of the collection and one of the finest armors to be found anywhere in the world (25) is a complete Gothic armor for man and horse. It was made in Landshut, South Germany, between 1475 and 1485 and is characteristic of the best period of armor making. Its elegant form and shell-like flutings produce a dazzling appearance, yet everything is truly functional. There is no obtrusive ornament and all the lines are curved and sloping so that any attacking weapon will have the greatest probability of glancing off.

One generation after the production of this Gothic Armor the style had completely changed (26); where the Gothic armor had pointed toes, radiating lines and smooth uninterrupted surfaces the new style called "Maximilian" in honor of the Emperor Maximilian I of Austria (although much of it was produced in the years following his death) had broad square toes (said to have originated because one of the Hapsburg princes had six toes on each foot) vertical flutings and horizontal roped ornament. At the same period, however, Germanic knights were wearing for the Tournament (27) a type of armor such as this suit for the Deutches Casteck, a type of joust in which no barrier was used but in which the riders had their legs protected by separate steel plates attached by straps to the saddle.



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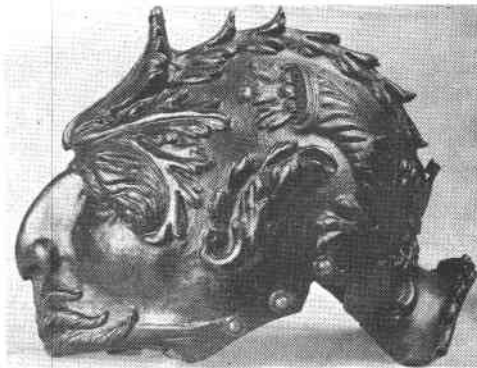
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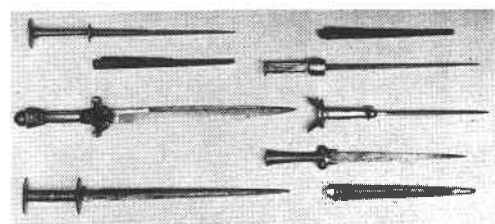
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The Wallace Collection is particularly rich in the armor of the 16th century. (28) Here is a magnificent parade shield from about 1556. It was made in Balogna by an armorer named G. Spacini who was, however, a native of Milan, the great armor making center. He etched in the steel of the shield against a gold background scenes from the life of the Emperor Charles V of the Holy Roman Empire; the scenes were originally designed by Marten Van Heemskereck. Here (29) is a helmet with gilt applied and this is another helmet of the type called a burgonet, German, about 1570, equally magnificently etch and gilded. This (31) is a half suit of embossed armor made about 1570 by Antonio Piccinino of Milan. It shows the complete repertory of skill of which the ancient armorer was capable. In addition it is embossed, etched, gilded and damascened with inlays of gold and silver. Magnificent as it is in this is nevertheless a decadent type of armor, for the fundamental principal of functionality - the protection of the wearer from his enemies - is no longer observed. The embossed surface offers all too many places on which a sword or lance point could catch. However, this is armor for parade and was never intended to face hostile steel.

In spite of its non-functionality embossed armor does present a very rich and magnificent appearances and there are some splendid examples in the Wallace Collection. This helmet with its grotesque lines (32) was made in Milan by Paole and Filippe Negrolì, probably the two greatest sculptors in steel who ever lived. It exaggerates the 16th century love of the grotesque yet in spite of this it is beautiful. Another helmet (33) if not by the same hands, is certainly from the same workshop. Embossed steel is magnificent but on a long parade grew pretty heavy so we find shields like this one (34) (there are two others like it) made of "cuir bouilli": leather that has been embossed and carved and then treated (traditionally by boiling it in oil) to make it hard and durable while at the same time keeping it much lighter than its steel counterpart.

The Greenwich factory of armorers established by Henry VIII continued on through the reign of Elizabeth and about 1590 produced (35) this handsome suit of armor attributed to Thomas Sackville, Lord Buckhurst, who later became the Earl of Dorset. It is interesting to see how the style of this late armor with its narrow pinched waist, corresponds to the civilian costume of the same period.

The Wallace Collection is equally strong in weapons of all types; (36) Here is a fine 17th century rapier of the type known as swept hilted. When men were armored gauntlets their hands were well protected but as the use of armor decreased the hand was left uncovered and the sword therefore developed a cage of protecting rings which eventually coalesced into the cup hilts of the Italian and Spanish rapiers of the later 17th century. The collection is particularly strong in early daggers. Here (37) are a number of the rarest types: Rondel dagger (pointing), the eared dagger (do.) and the kidney dagger (do.) which appeared early in the 14th century and lasted especially in Scotland well into the 17th, its popularity based on a crude and vulgar resemblance. The amazing thing is that so many of these daggers have their original scabbards, such perishable items being for this early period the rarest of the rare. In the early 16th century the Italians developed a type of broad bladed sharply tapering dagger called the "Cinquesdea" suggested by its being about a handbreadth wide at the hilt. The Wallace Collection has no less (38) than 12 of these rare daggers, many of them most beautifully etched and gilded, (39) some from the hand of Ercele dei Fideli of Ferrara.

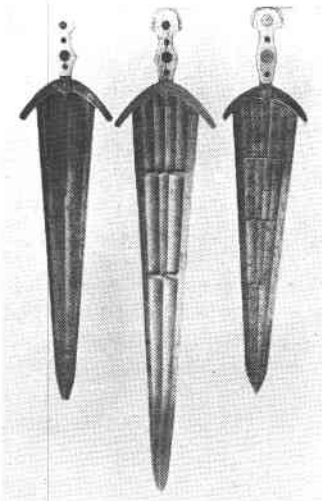
Another handsome type of dagger is the so-called Holbein dagger popular among the higher ranks of the Swiss Landesknechte. These daggers were provided with scabbards of gilt bronze with an outer shell of open work in a design often copied from Holbein's "Dance of Death." Here (40) you see Death calling for typical Swiss citizens of the period.

Perhaps the finest Mediaeval crossbow in the world is this one (41) with its shaft covered with plaques of horn carved with religious and secular themes. Like most surviving sporting crossbows it is of German make. With the crossbow the slide shows a handsome presentoir, a large serving knife with which a prince's maitre d'hotel was accustomed to pick up slices from freshly carved joint of meat and offer them to his employer's trencher.

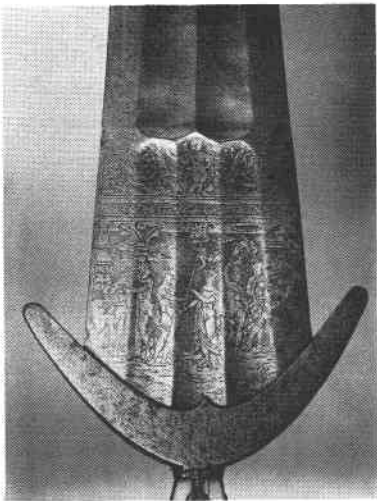
The earliest practical hand firearm was, as you know, the matchlock. It continued in use through the 16th and 17th century. The wheellock, which appeared early in the 16th, was a delicate and expensive mechanism. It was made primarily for sportsmen and the beautiful wheellock guns and pistols in the Wallace Collection are all sporting and parade weapons rather than official military pieces. Here (42) as one group of wheellock guns shown from the lock side so that you may observe the variations in lock construction and here (43) is another group from the opposite side to give you a chance to admire the beautiful inlay and carving with which the wooden stocks were decorated.

Some of the most magnificent firearms ever made had the locks, barrels and other metal parts carved by Daniel Sadeler who was appointed Court Gilder to Emperor Rudolph II at Prague in 1603, and from 1610 until his death in 1632 worked as an independent sculptor in steel at Munich. (44) These two wheellock guns were probably his work as certainly was (45) this pair of wheellock pistols and (46) this especially handsome pistol. The Italians also were capable of fine sculpture in metal (47). In 1688 G. Mazarolli in Venice cast and carved this magnificent cannon decorated all over with scenes from Classical mythology. The carriage dates from the 19th century. There is a companion piece in the Hermitage Museum at Leningrad.

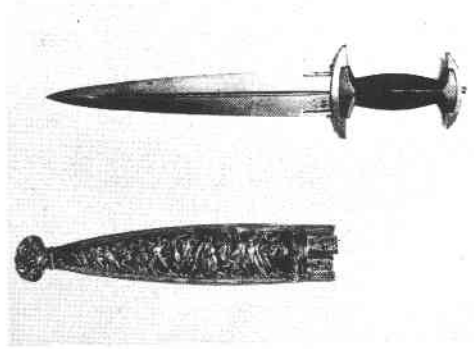
The Wallace Collection also contains a large number of fine specimens of Oriental arms and armor including the figure of a Rajput warrior in full war panoply of the late 16th to 18th centuries and another figure wearing the military dress of a Chinese mandarin. There are a particularly fine lot of Persian and Turkish



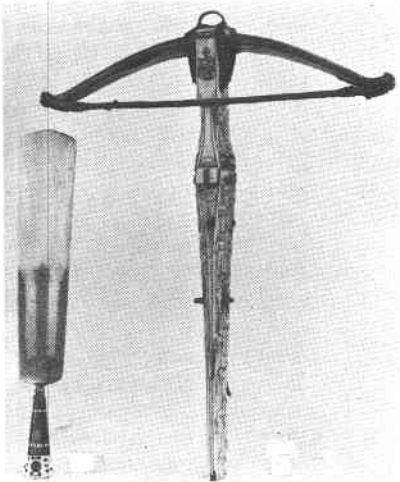
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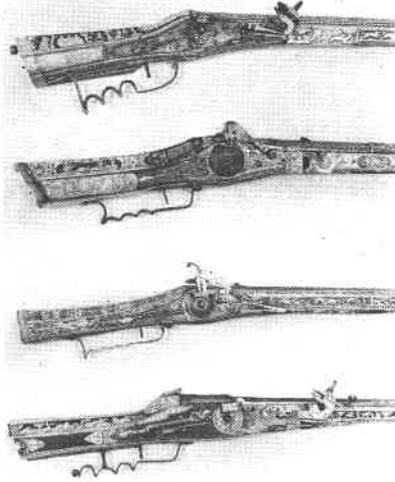
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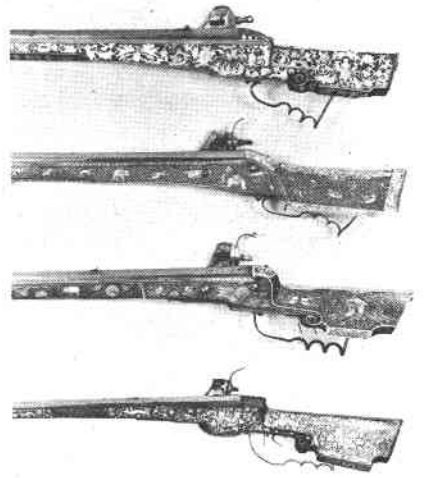
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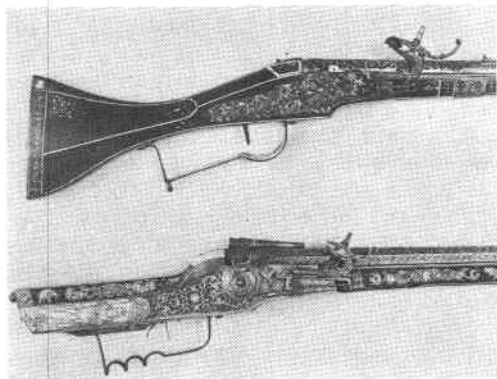
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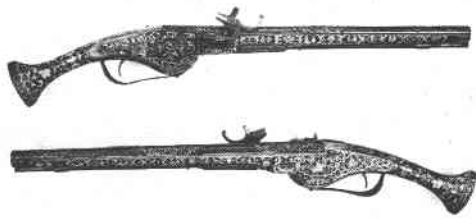
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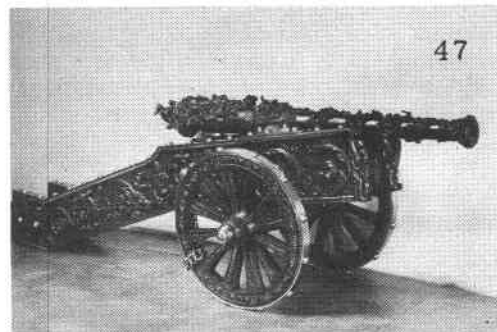
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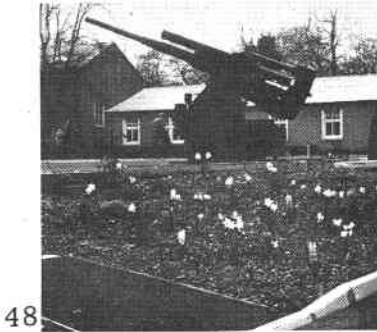
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scimitars, daggers and knives of Damascus steel which should not be confused with "damascened," Damascus steel is a carefully arranged mixture of steel and iron or of steels of varying formulae welded and blended together so that when the formed and polished blade is treated with acid it develops a delicate moiré pattern. Damascening is a process of inlaying precious metals (so-called "true damascening") or overlaying with gold or silver foil ("false damascening"). Of course a damascus-type blade may also be damascened.

The National Maritime Museum at Greenwich is the ideal place for anyone who wishes to study the development of British arms as used at sea, the so-called "sea service" weapons. This is an interesting but rather specialized branch of the history of arms and armor, but Greenwich is the place to study it. Here you can learn that regulation swords were in use only after 1805; that not only other officers than midshipmen sometimes carried dirks, but that, for a time, midshipmen were forbidden to wear them. You can learn that firearms for sea service had fittings of brass which was less easily corroded by salt air and water than steel and had flat butt plates so that they would stand steady in arms racks or when placed with the butts against the deck for loading. You can see the naval musketoon, the largest member of the blunderbuss family, and the seven barreled "volley gun" used from the fighting tops though not, as legend would have it, as a result of the death of Admiral Nelson since these guns were already obsolescent by that time. But this is all specialization and we must continue our journey.

From Greenwich we went to Woolwich where we first visited the National Museum of Artillery. Large cannon of various types are displayed in the open air (48).

The principal building of the Museum is the famous "Rotunda" (49) built by Nash as the outer casing for a canvas pavillion in which the Prince Regent entertained the Allied Sovereigns in St. James's Park in 1814. It used to stand at the foot of Regent Street in London and was taken down and re-erected at Woolwich in 1819. Inside the Rotunda are cannon and small arms in a vast variety. There are a number of interesting specimens from the (1545) wreck of the "Mary Rose." There are also many experimental pieces. One which particularly interested me was made in 1862 and has in the forward part of the barrel six rows of diagonal holes, intended to lessen the recoil by allowing some of the powder gases to escape backwards thus tending to apply a forward force. Unfortunately, although the recoil was indeed lessened, the range and accuracy suffered greatly. Had the designers thought to make these holes in a forward extension of the barrel, instead of the barrel itself, the working length of the barrel would have remained the same and they would have had an effective "muzzle brake" without loss of any kind; we should probably have had this now common addition to our rifles and target pistols a century earlier!

From London we flew to Scotland where we visited the Glasgow Museum and Art Gallery which was opened especially for our visit. This is a tremendous institution which combines an art museum, a natural history museum and a museum of science and engineering and is an important institution in every one of its fields of endeavor. In arms and armor the museum is fortunate in possessing the magnificent collection formed by the late Robert Lyons Scott including the magnificent Milanese Gothic armor from the castle of Churburg belonging to the Trapp family of southern Tyrol. There is also a fine Greenwich suit of about 1550 made for the first Earl of Pembroke, russeted, with etched and gilt bands. There are many other fine specimens of arms and armor there. In one of the upstairs paintings galleries I found something I had been seeking for many years and fortunately was able to purchase a slide of it on the spot. It is a 15th century painting by the Maitre de Moulins (49A) showing the donor with his armored patron saint. The latter holds a lance and on the lance quite clearly to be seen is a graper. The graper is a thrust bearing and the rarest of all pieces of armor. It is rare because it was not decorated and because lances once broken were usually discarded. When this occurred it was doubtless easier to make a new graper than to take the old one off a broken lance and reforge it to fit the new shaft. You have all noticed the lance rest on suits of armor and quite rightly judged that its purpose was to support the weight of the lance. However, it had another and more important purpose. The graper was a simple ring of iron firmly affixed to the shaft of the lance. When the lance was put in position resting on the lance rest with the graper in front of and firmly pressed against the lance rest, the lancepoint had behind it the entire momentum of man and horse plus the weight of whatever armor both were wearing.

A wall case (50) contains eighteen crossbows, seven of them with composite bows, and eleven with steel ones. There is a magnificent cranequin, one of the best I have ever seen, with its top plate ajouré with the signs of the zodiac.

Here (51) is a hunting sword of which the rear part of the blade bears a curious mechanism consisting of a number of numbered disks three on each side, mounted so that they can be rotated, but friction tight. Each of these wheels is marked with numerals, the first one to ten, the second ten to one hundred, and so on up to a million. They were apparently intended to be used to record the number of items of game killed on a hunt. But the wheels do not have contact one with another. It is interesting to think that a comparatively simple addition of interlocking notches and fingers would have made this mechanism into an efficient little adding machine.

Next (52) is a boar spear with two wheellock pistols of the early type mechanism having a wheel housing ring extension which forms the doghead spring, and with radial pan covers. The pan cover release buttons are missing. These locks are elaborately etched and gilded.

This (53) is a wheellock only, of the geared type. Geared wheellocks are not common, but there are two distinct types of them. In one type there is a small gear or pinion on the squared winding-shaft arbor. This



49-A



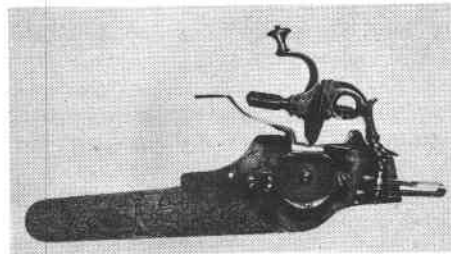
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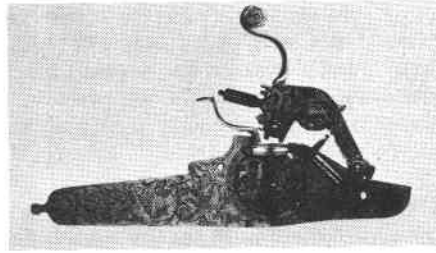
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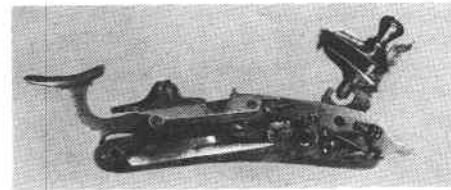
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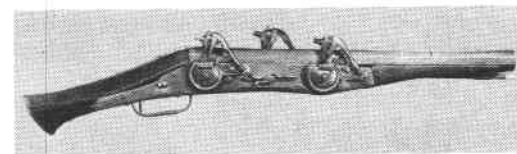
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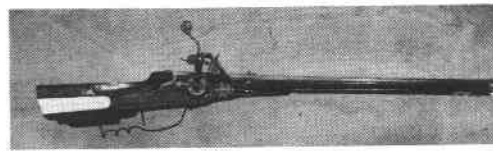
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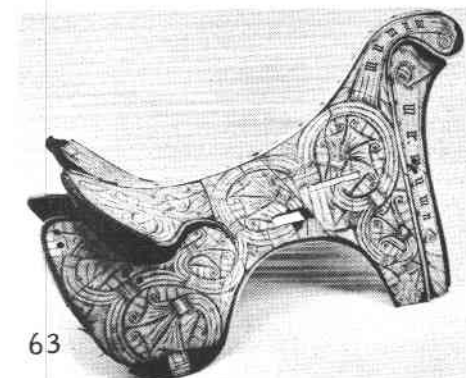
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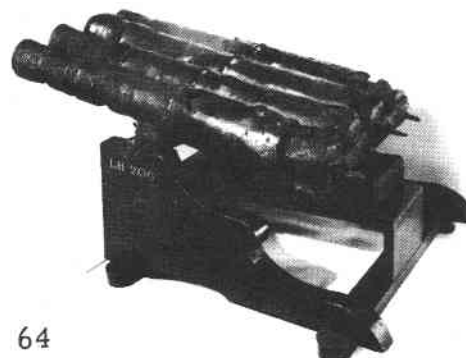
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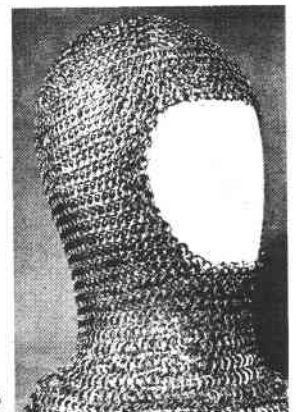
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engages with a large gear on the wheel arbor. The result is that it is necessary to turn the spanner several times around in order to rotate the wheel for its normal three quarters of a turn. As a result, although the spanning process is slower, it is much easier, for the hand operating the spanner is aided by the mechanical advantage of the gearing, as well as by the leverage of the spanner itself. The other type, to which this wheellock belongs, has an entirely different purpose; the chain with its toggle and the large gear, are on the winding shaft arbor; the small pinion is on the wheel arbor. It takes as much strength to span this type of lock as any ordinary wheellock, but when it is spanned, the sparks will presumably be stronger and more abundant, as the wheel will make several revolutions while the winding shaft arbor is making the customary three quarters of one. The lockplate of this interesting wheellock is engraved with a lion hunt.

Another unusual wheellock is this one (54). This lock has the wheel entirely on the inside of the flat lockplate is pierced over the wheel so that its motion can be seen through the piercing. The doghead shaft is flush with the lockplate, and is similarly ajouré. The lockplate is engraved with a wyvern and a rearing horse in a floral scroll with a bird.

There is a wheellocktschinke (55) the barrel engraved "Martin Dauch, Esgowsky." This firearm resembles the one belonging to Mr. Clarence B. Fall of St. Louis which I described to you at one of our earlier meetings. The two push buttons which control respectively the pan cover and the engagement of the secondary sear are hollow; whenever anyone ignorant of the secret tries to operate the mechanism, and in so doing pushes upon these push buttons, a long, sharp needle will be driven into his thumb. On the other hand, once you know the secret you can operate the lock quite normally. In the present case, one of the push buttons is missing, but the needle is still present. An unusual snaphaunce lock (56) is dated 1797 and signed by Cassiano Zenotte. This has a supported sear, but there is no bridle on either sear pivot or on the doghead tumbler.

This (57) is an interesting flintlock belt pistol. Its maker was presumably a cautious man, for the lock has both half-cock and dog safety. The half-cock acts on the tumbler, working sideways, and is not supported; the full cock sear projects through the lockplate and acts upon the heel of the hammer, while the dog acts on a tail projecting out beyond the heel. This pistol has brass barrel, ramrod, buttplate and lockplate, with an iron knob trigger, and bears the marks of the London Gunmakers' Company. It appears to date about 1640-60.

Here are a few additional photographs which came in too late for the lecture.

(58) A wheellock pistol of early type designed to fire three superimposed loads, one after the other (let us hope!)

(59) A self-spanning, wheellock rifle with finely-chased lock hardware. The lockplate is engraved with a bear hunt. Note the latch by which the doghead is connected to or disconnected from the self-spanning mechanism.

(60) An all-metal, self-spanning, sector lock pistol.

(61) A screw-barrel breech-loading flintlock gun.

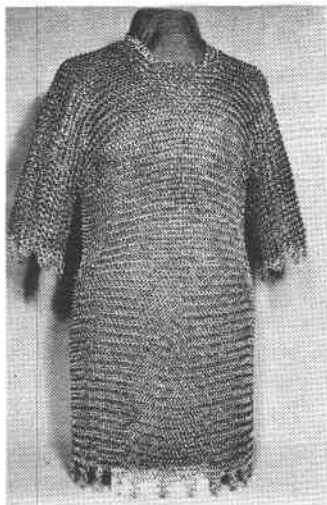
(62) A self-loading flintlock gun on the Lorenzoni model II system, made by Paris of Derby, who made a pistol operating on the same principle which is in the City Art Museum of St. Louis.

(63) A fine bone-covered mediaeval saddle.

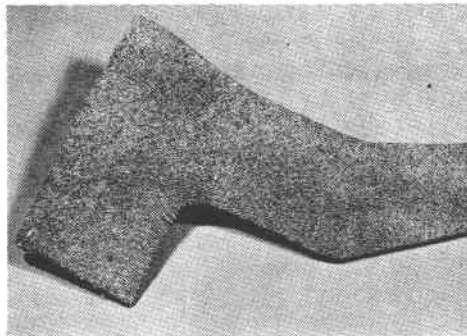
From Glasgow we went by omnibus to Edinburgh stopping on the way to visit Dean Castle at Kilmarnock, a fine medieval castle which has been skillfully restored and made suitable for modern living. There are 14 suits of armor of varying degrees of completeness and authenticity, two of them with extraordinarily large shoulder flanges which nevertheless appear authentic. There are 25 helmets including a handsome embossed one and there is another of those embossed Cuir Bouilli leather shields. There are 92 swords including some very early ones and one with a curious telescoping blade; if one thrusts the sword forward with a lunging motion the blade expands by nearly three feet and locks in place. Its appearance must have been startling, but it is a heavy and, I should think, not a very practical weapon.

In Edinburgh we visited the National Museum of Antiquities of Scotland and the Scottish National Portrait Gallery in the same building. The Museum of Antiquities has interesting relics of very early date, many of them from the period of the Roman occupation of Great Britain. A Special exhibition of Scottish arms had been arranged for the visit of the Congress, including a magnificent Scottish claymore with a curved grip of walrus ivory and with no less than four quilons in the lobated claymore style. Photographs of these were not permitted or available, but fortunately I was able to secure a picture of this unusual Battery of four leather covered light cannon (64).

From the museum of antiquities we went on to the Royal Scottish Museum. Here (65) are a few of their exhibits. This is a fine early coif, very similar to one in the Tower of London. It dates from about 1300 to 1350 and is made of large strong flat links carefully riveted. Notice how skillfully the fabric is narrowed in the neck region. The next (66) is a complete shirt of mail also with rather large links and with brass rings at the border, neck and ends of the sleeves. Then here (67) is a sleeve of chain mail made of the most amazingly



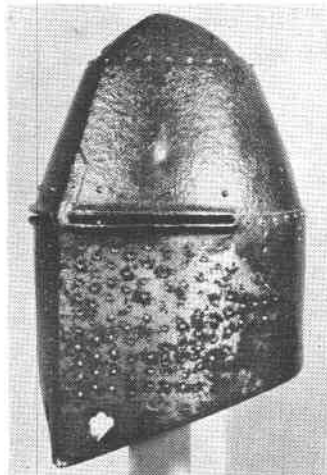
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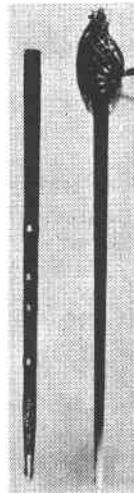
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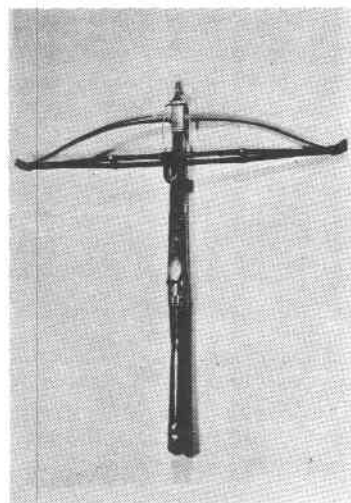
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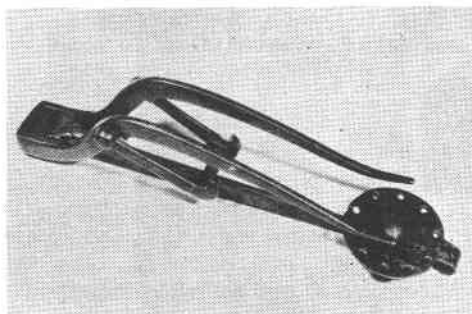
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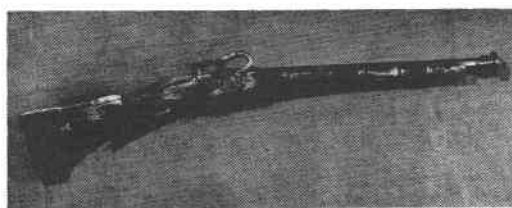
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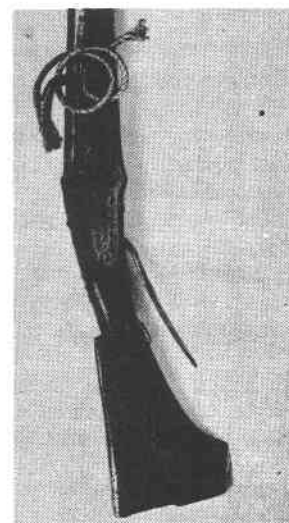
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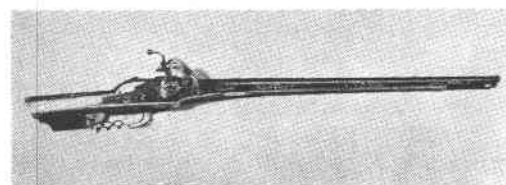
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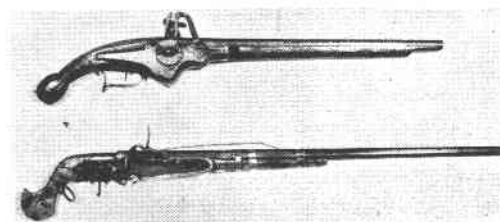
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fine small links and beautifully shapped at the shoulder and elbow joints. This also has brass rings at the wrist. This is a "Jack" (68) similar to three at the Tower. it is a plain garment intended to be worn under a colorful overgarment and contains overlapping steel scales held between the two layers of quilted cloth. The helmet is a 16th century morion. Next (69) is the heaume or great tilting helm of Sir Richard Pembridge who died in 1375. It was displayed over his tomb before it came to the museum, but appears not to have been a "funeral helm," made only for this purpose, but to have been the actual one which he wore during his life. The large hole in the lower edge was presumably the place of attachment for the chain by which it was suspended over the tomb. This (70) is a globose breastplate, north Italian, of about 1510. It is very similar to a specimen in the Metropolitan Museum of Art in New York. Notice the unidentified armorer's mark on the middle fluting, the strong heavy roping and the heavy turned edge at the top. This (71) shows a war hammer of the 15th century, a type of weapon which was particularly popular for judicial duels in which knights settled a grievance by fighting each other in a narrow ring before official spectators. Here (72) we see the "Battle Abby Sword" dating from 1417 to 1434. The blade is wide at the hilt and tapers to a fine point. The quilons are straight, and there is a wheel pommel covered with engraved silver, originally gilt. It was formerly in the Meyric and Noel Patton collections and is one of the best known swords surviving from the 15th century. This sword (73) of the type called a Schiavona is Venetian or Dalmatian, of about 1780, with its original scabbard. Observe how completely the user's hand would be covered and protected by the graceful interlacing steel bars of the hilt. This next item (74) was of particular interest to me for it is almost identical with one which I own. It is a light type of bullet-shooting crossbow called a "prodd," very popular in England in the 19th century for shooting at rocks. It is signed by James Johnson of Manchester and was made about 1820.

This peculiar object (75) is a separate spanning mechanism for an earlier type of sporting crossbow. It is called a goat's foot lever and I must confess that it is hard to understand from the photograph; you will have to take my word for it that it was a quick and convenient means of pulling back the bowstring of a light arrow shooting crossbow into the spanned position. Here (76) is a matchlock gun, slightly bellmouthed but not a true blunderbuss, with elaborate brass mountings including an appliqué on the right side of the stock showing the Virgin and Child in glory. On the lockplate is a crude inscription (77) in very corrupt Spanish which has been translated: "I was made in the year 1844 for Benito Fres.....Do not ask to borrow me, and I shall not disappoint you. I belong only to my owner." 1844 seems an extraordinarily late date for a matchlock, but the date is quite clear and I think there is every reason to believe that the piece is perfectly genuine, and is simply an example of the late survival of a primitive form, probably in the distant provinces.

Here (78) is a handsome breech-loading self-spanning wheellock rifle made in Augsburg in the second quarter of the 17th century. At the rear of the lockplate you can see the safety catch, and just possibly at the pivot point of the doghead another catch which allows the doghead to be engaged with, or disengaged from, the self-spanning mechanism. The breech-loading device is indicated by the forward position of the wheel and the opening at the rear of the barrel in which the steel cartridge could be inserted. Of these two pistols (79) the one at the top is a rare type of wheellock pistol characteristic of the small Spanish town of Ripoll. The one below is a home-made article, a flintlock gun labelled as "made and used by people of the Tartar race called Mecs in the north of Siam." The entire mechanism is on the outside of the lockplate, which appears to consist of a worn-out file. It is a crude affair but the mechanism is really of a beautiful ingenuity and simplicity.

Finally this flintlock pistol (80) is unusual in that its brass barrel contains seven bores. I should like to know (and have written to inquire) whether this is a simple "volley gun" firing one bullet from each bore, all at the same time, or whether it is of the type known as an "Espignole" such as were used in the Danish army during the Thirty Years' War. These had multiple bores, and an arrangement of vent holes leading from one bore to another in a spiral path. They were very carefully loaded with multiple charges in every bore but one. When the arm was fired, the barrel which had a single charge in it would go off first. As the bullet left the muzzle, flame would pass through a vent near the muzzle to the next barrel, and would ignite the top charge in it. That in turn would pass fire through a vent to the top charge in the next succeeding barrel, and so on along the spiral until all of the barrels had been emptied of all of their charges. The result was a Roman candle-like discharge of many bullets in a very short space of time; in effect a burst of machine gun fire. The difficulty was that, once fired, it had to be sent back to the Arsenal at Capenhagen to be reloaded!

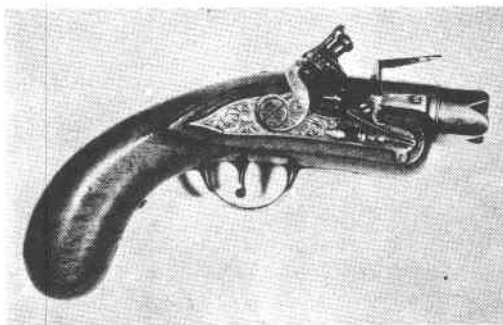
In the afternoon we visited Edinburgh Castle, a real Mediaeval one, most impressive as viewed from the town below. Like most castles, it has been built up gradually over the centuries, the earliest part being more than 800 years old. There were, of course, originally draw-bridge and portcullis; although these have disappeared, their locations are still visible. It is easy to understand how such a fortress could dominate the city, 270 feet lower down.

After a long climb we came upon (81) "Mons Meg," a famous 15th century wrought iron bombard, with a bore of one foot, eight inches. It is built up of longitudinal ribs with hoops shrunk on to hold them together. Before it was burst in firing a salute to the birthday of King James VII of Scotland it is said to have been able to project a stone ball 2867 yards. The carriage on which it stands is of course a modern one and is for purposes of support only.

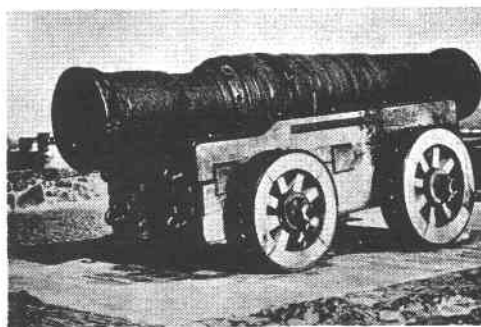
The Scottish United Services Museum occupies two sides of the Castle yard, and contains a collection of uniforms, headdresses, weapons and other exhibits associated with the military history of Scotland. Most of this material, however, is of the 18th century or later. On the north side of the castle yard is the Scottish

National War Memorial containing a shrine which stands at the highest point of the castle rock and encloses, in a sealed casket, the names of all the Scotsmen who died in the Two World Wars.

The following day we returned to London and dispersed to our several homes. I should not, however, leave the discussion of British Museums of arms without mentioning the Great British Museum, itself for although the Collection there is a small one, there are a few really important pieces, among other a fine Globose breast-plate with an engraved and gilt appliqué of the Virgin and Child on a crescent moon, a very fine early tilting helmet found, of all places, on the White Nile, (82) a good basinet, (83) and a Flemish parade shield (84) of the 15th century painted with the device of a lady, a knight in armor, the figure of Death, and the gallant motto "Vous ou la Mort." In addition, the British Museum has vast quantities of early material from Pre-Roman times up through the Dark Ages.



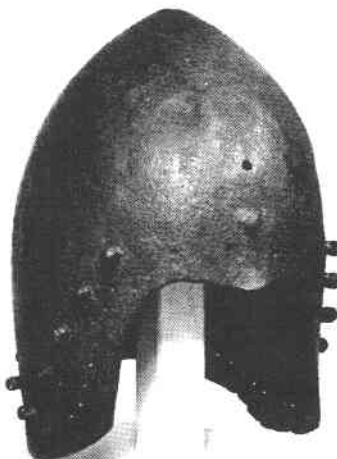
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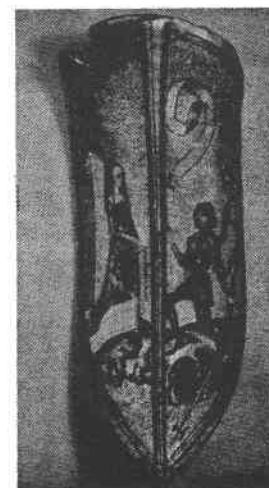
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ACKNOWLEDGMENT

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Her Majesty's Tower of London	Figs. 2-19
The Wallace Collection, London	21-47
The Museum and Art Gallery, Glasgow	49A-63
The National Museum of Antiquities, Edinburgh	64
The Royal Scottish Museum, Edinburgh	65-80
The British Museum, London	82-84

Our apologies are offered for numerous misprints and occasional lacunae due to the necessity of preparing the text from our lecturer's notes and our recorder tapes, without adequate proof-reading. We hope that in spite of these defects the article may be of value to those members who were unable to attend the lecture, and may encourage members of the Society who visit Great Britain to inspect for themselves the treasures of the museums who have so generously co-operated with us to make this publication possible.